PS-LX22/B/C/(A)/B(A)

PS-LX22: SILVER TYPE
AEP Model
UK Model
US Model
Canadian Model

PS-LX22B(A): BLACK TYPE
AEP Model

PS-LX22C: SILVER TYPE
Canadian Model

PS-LX22(A): SILVER TYPE
AEP Model

PS-LX22B: BLACK TYPE
AEP Model

The PS-LX22(US, Canadian model) is not supplied with a cartridge, while the PS-LX22(AEP, UK model), LX22(A), and LX22B(A) are supplied with an XL-150 cartridge and the PS-LX22C is supplied with a VL-5 cartridge.
The PS-LX22(A) and LX22B(A) are not supplied with a dust cover.

STEREO TURNTABLE SYSTEM

SPECIFICATIONS

Turntable

Platter	30.4 cm (12 in.), aluminum-alloy diecast
Motor	Linear torque BSL (brushless and slotless) motor
Drive system	Direct drive
Control system	FG servo control system
Speed	33⅓ rpm, 45 rpm
Starting characteristics	Comes to nominal speed within a half revolution (33⅓ rpm)
Wow and flutter	0.04% (WRMS)* 0.055% (WRMS) ±0.05% (DIN)
Signal-to-noise ratio	72 dB (DIN-B)

Tonearm

Type	Statically balanced
Pivot-to-stylus length	216.5 mm (8⅝ in.)
Overhang	16.5mm (21/32 in.)
Stylus force adjustment range	0 – 3 g
Cartridge shell weight	5.2 g (US, Canadian model)
Cartridge weight range (including a cartridge shell)	7.5 – 12 g

—Continued on page 2—

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Note
Appliance conforms with EEC Directive 76/889 regarding interference suppression.

* This new measuring method concerns only the turntable assembly, including the platter. It excludes wow and flutter caused by the tonearm, the cartridge, or the record. Measured by obtaining signal from magnetic pick-up head.

MICROFILM

SONY®

SERVICE MANUAL

Cartridge XL-150 (supplied only with the PS-LX22: AEP, UK Model, LX22(A), and LX22B(A))

Type	Moving magnet type
Frequency response	10 Hz to 25kHz
Channel separation	20 dB at 1 kHz
Output voltage	3 mV at 1 kHz, 5 cm/sec.
Load impedance	50 to 100 kilohms
Tracking force	1.3 to 2.3 g (1.8 g recommended)
Stylus	Sony-ND-150G (Conical 0.6 mil diamond)
Weight	8.8 g

Cartridge VL-5 (Supplied only with the PS-LX22C)

Type	Moving magnet type
Frequency response	10 Hz to 20 kHz
Channel separation	20 dB at 1 kHz
Output voltage	3.5 mV at 1 kHz, 5 cm/sec.
Load impedance	47 to 100 kilohms
Tracking force	1.5 to 2.5 g (2.0 g recommended)
Stylus	Sony ND-5G (Conical 0.6 mil diamond)
Weight	5.0 g

General

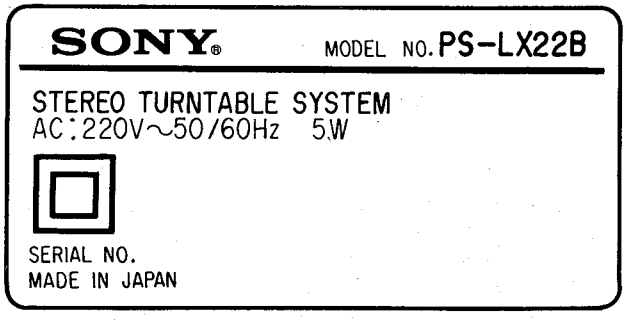
Power requirements	AEP model: 220 V ac UK model: 240 V ac US, Canadian model: 120 Vac, 60 Hz
Power consumption	5W
Dimensions	Approx. 430 x 110 x 355 mm (w/h/d) (17 x 4 3/8 x 14 in.) including projecting parts and controls
Weight	Approx. 4 kg (8 lbs 13 oz), net Approx. 4.3 kg (9 lbs 8 oz), in shipping carton

FEATURES

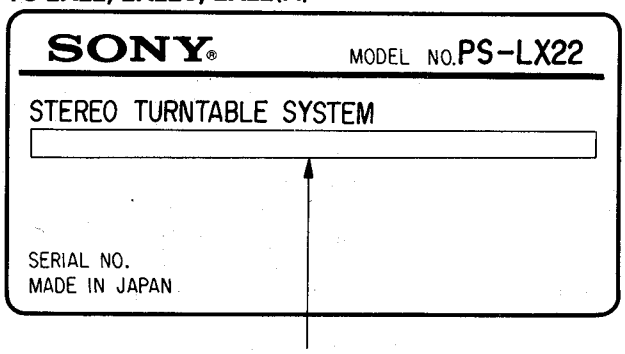
- The linear torque BSL (brushless and slotless) direct drive servo motor has a high signal-to-noise ratio.
- The low-mass tonearm and cartridge allow the stylus to track with greater accuracy.
- The precise tracking force for the supplied cartridge is easy to set using a simple tracking force setting guide. (AEP, UK model)
- Disc centering guides facilitate placing a 30 cm record over the center spindle.
- The turntable has resilient feet that isolate the mechanism from external shock and vibration.

MODEL IDENTIFICATION
— Specification Label —

PS-LX22B, LX22B(A)



PS-LX22, LX22C, LX22(A)



AEP model: AC: 220V ~ 50/60Hz 5W
UK model: AC: 240V ~ 50/60Hz 5W
US, Canadian model: AC: 120V ~ 60Hz 5W

*** Servo PC Board**

There are 2 types of Servo PC Board for PS-LX22.

	Former Type	New Type
Part No.	1-607-275-11	1-607-275-13

(PS-LX22B has new type only.)

SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

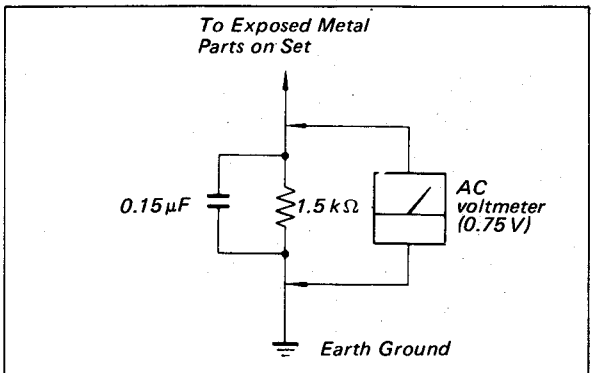
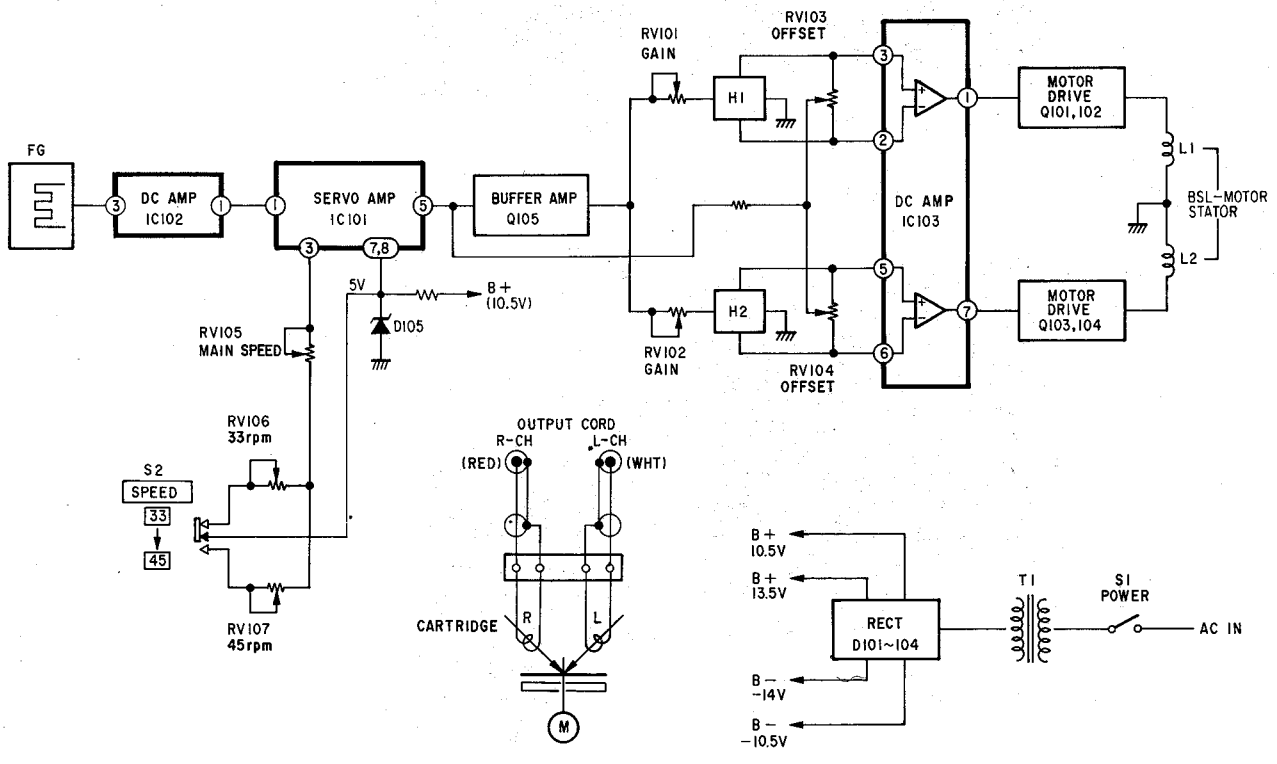


Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



1-2. CIRCUIT DESCRIPTION

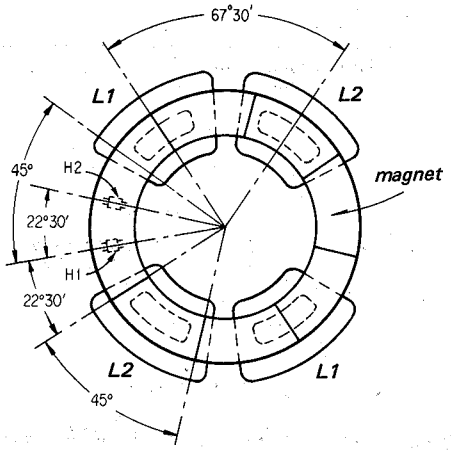
MOTOR

The method for detecting change in turntable rotation speed for the BSL (Brush and Slotless) DC servo motor on this set is different from the conventional method (detection by MG head fixed to the frame). On this set it is performed by the FG board fixed to the stator.

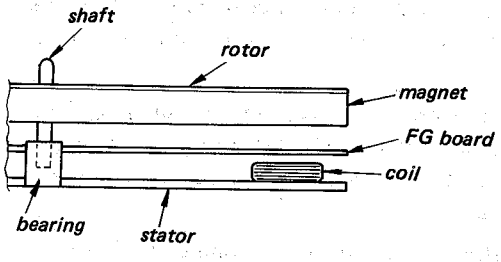
For this purpose, 256 poles of magnetization (SN alternately) are shallowly layered on the surface of the drive magnetizer (8 poles alternately SN) on the magnet used to rotate the rotor.

The frequencies detected at the FG board are:
$33^1/_3$ rpm---- 71.1 Hz
45 rpm------96.0 Hz

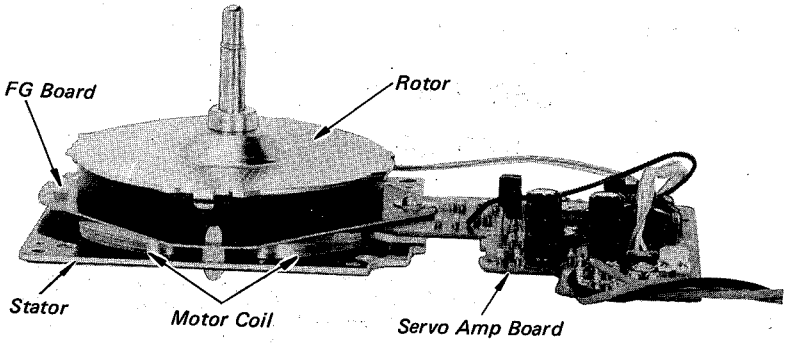
Motor Internal Diagram (upper surface)



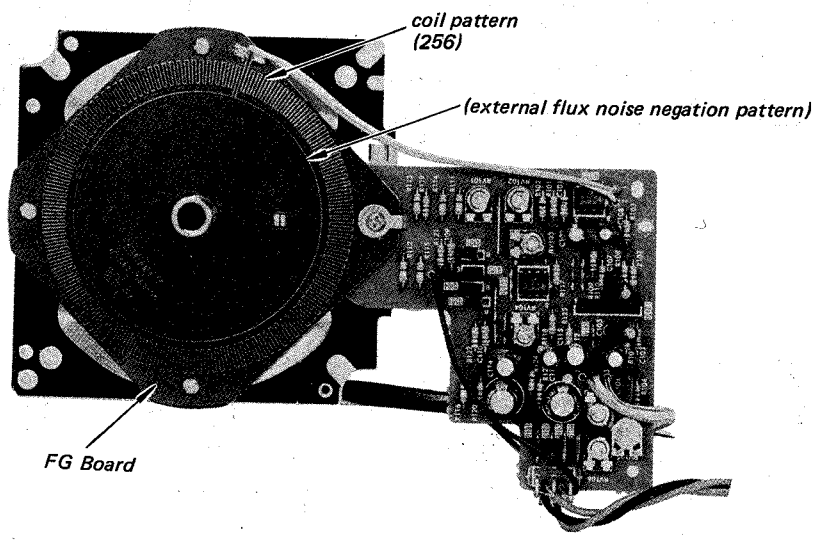
(cross-section)



Motor External View



External View of FG Board (with rotor removed)



ELECTROMOTANCE GENERATED ON FG BOARD

On the FG board, if the radial pattern Ⓐ in Figure 1 is considered as one conductor, when the rotor rotates, the conductor cuts the magnetic flux, electromotance is generated on the conductor, and its direction changes from the Fleming's right-hand rule to that in Figure 1.

Overall, the spacing of the radial pattern on the FG board and the rotation speed detection sine-wave magnet peak is the same, so the electromotance generated in all of the patterns is directed in a uniform direction as shown in Figure 2 if the pattern is considered as one loop.

Therefore, the electromotance generated on the one pattern Ⓐ on the FG board has 256 poles worth of electromotance added. (circular integral method)

The frequencies detected on the FG board are obtained as follows.
For one radial pattern, sine-wave electromotance is generated one time for 2 SN poles.
Therefore, when the rotor rotates one time:
256 (poles) ÷ 2 = 128 (times)
For 45 rotations:
128 (times) x 45 (rpm) ÷ 60 (seconds) = 96 (Hz)

In the same way, for $33^1/_3$ rotations:
128 (times) x $33^1/_3$ (rpm) ÷ 60 (seconds) = 71.1 (Hz)

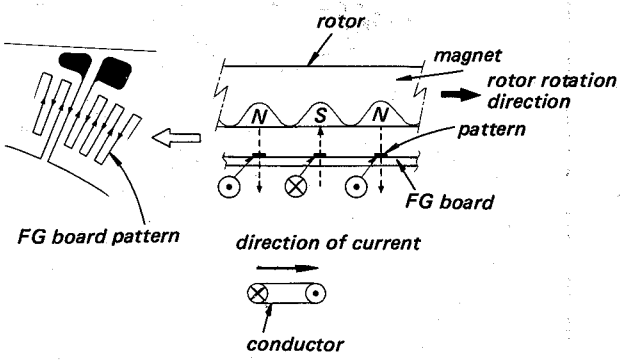


Fig. 2

FG Board Pattern Diagram (pattern surface)

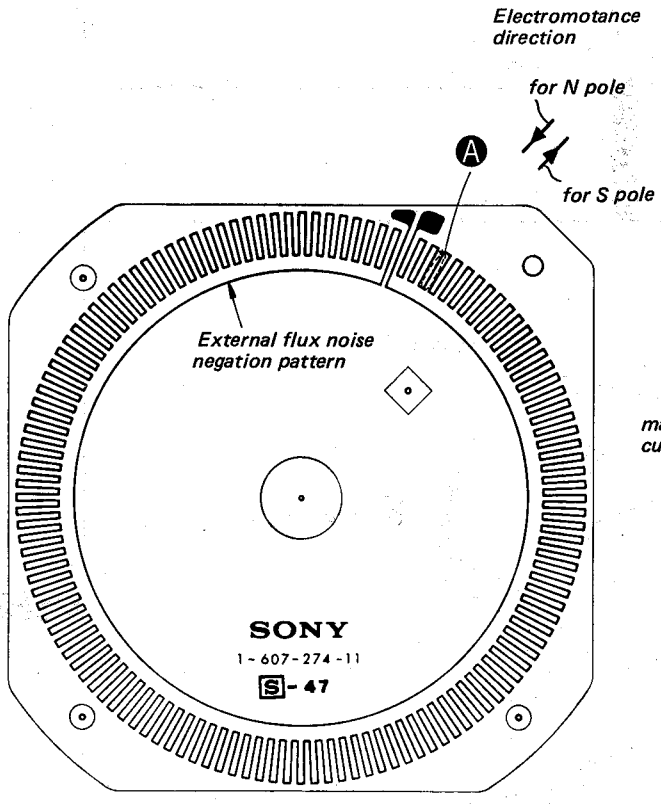
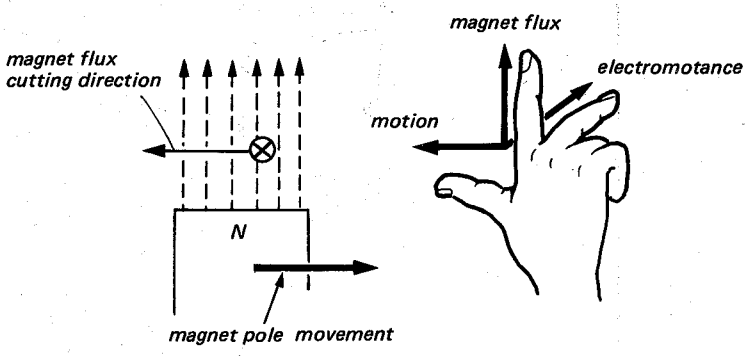


Fig. 1



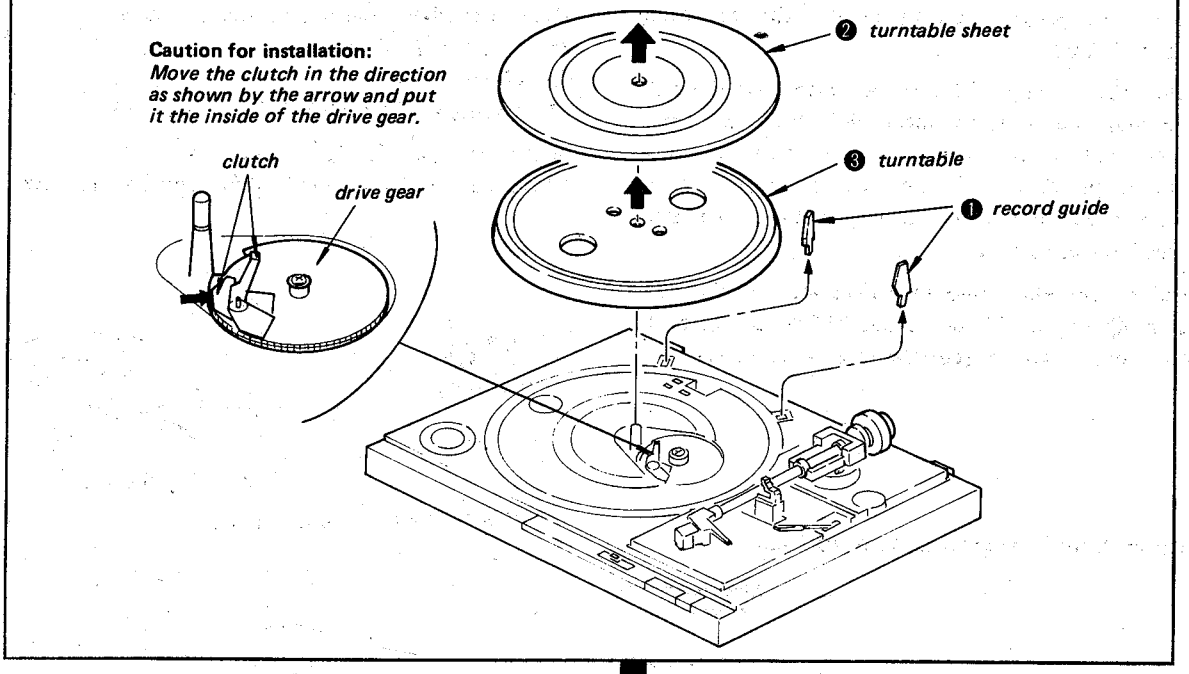
Fleming's right-hand rule

SECTION 2
DISASSEMBLY

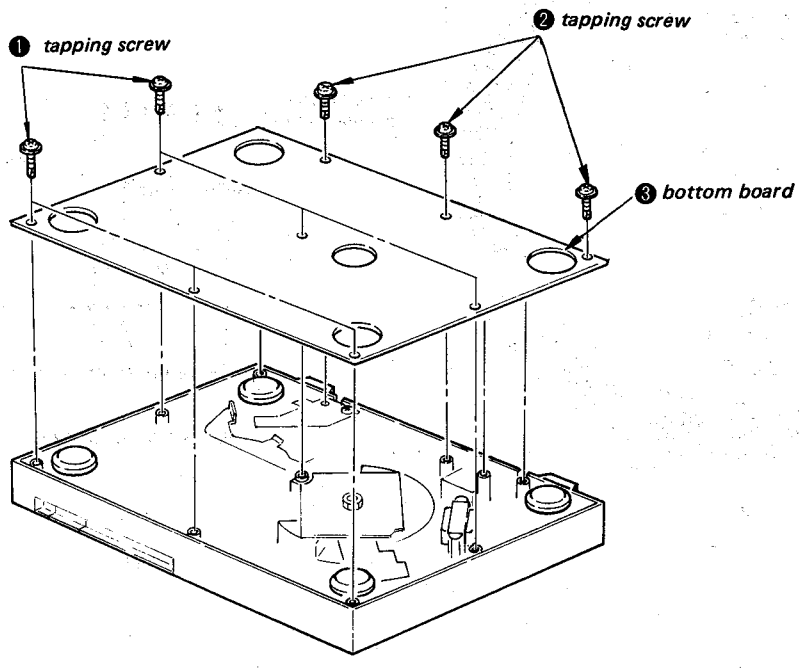
Note:

- Follow the disassembly procedure in the numerical order given.
- Be sure to note the parts placements/positionings of each other before disassembling them part.

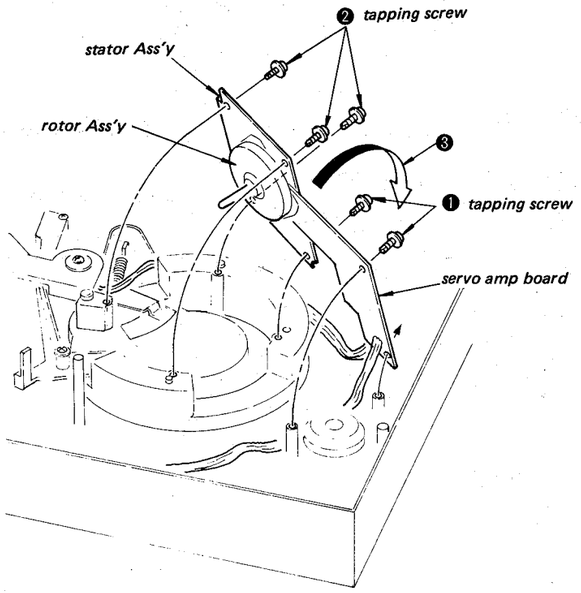
TURNTABLE REMOVAL

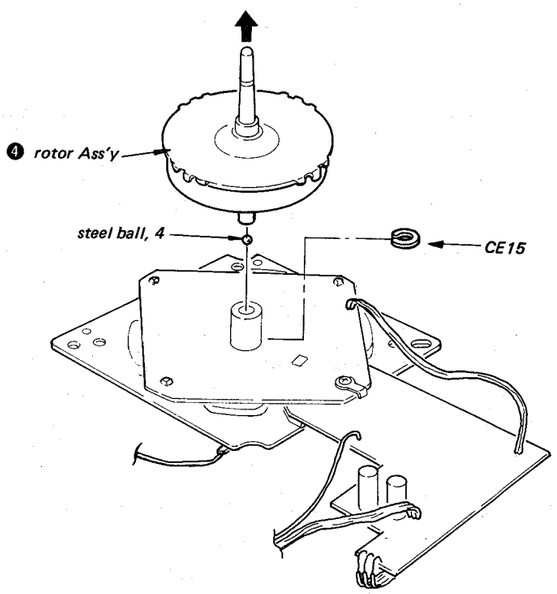

Caution for installation:
Move the clutch in the direction as shown by the arrow and put it the inside of the drive gear.
clutch
drive gear
❷ turntable sheet
❸ turntable
❶ record guide

BOTTOM BOARD REMOVAL

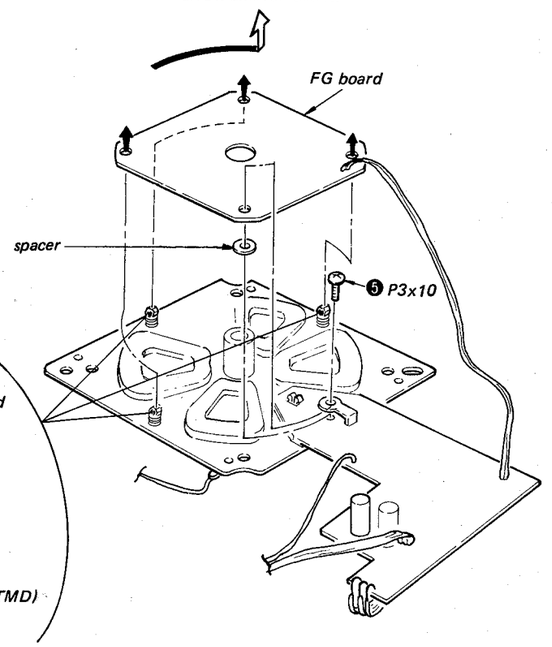


SERVO AMP BOARD / STATOR ASS'Y / ROTOR ASS'Y REMOVAL

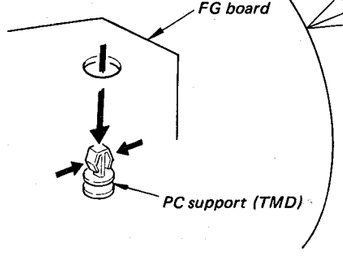




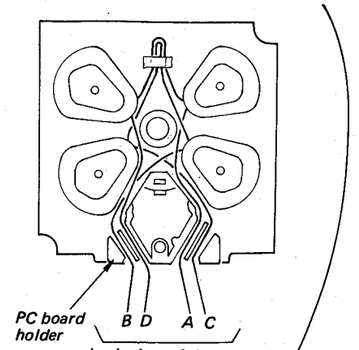
❼ *Turn the FG board in the direction as shown by the arrow and remove it.*

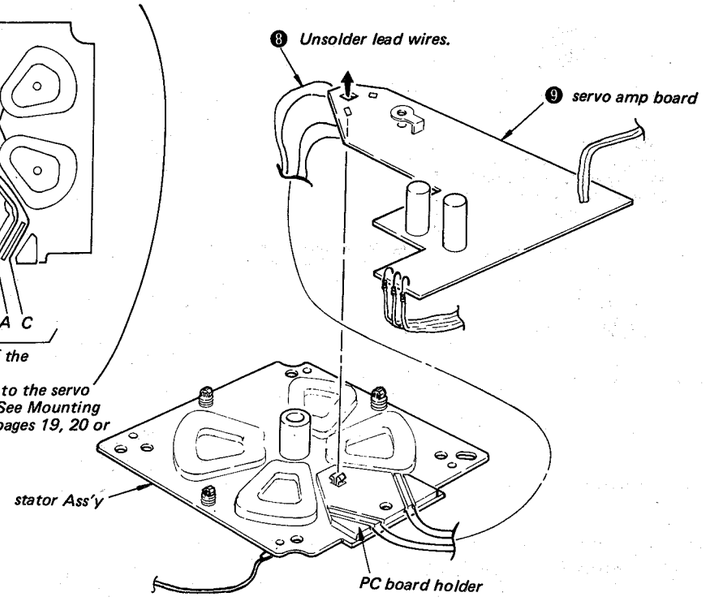


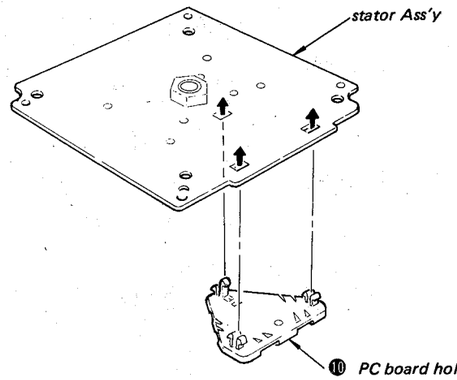
❻ *Remove the FG board from the PC support.*



When installing, run the lead wires of the motor coil through the grooves of the PC board holder.


PC board holder
B D A C
lead wires of the motor coil
(Installation to the servo amp board: See Mounting Diagram on pages 19, 20 or 23, 24)

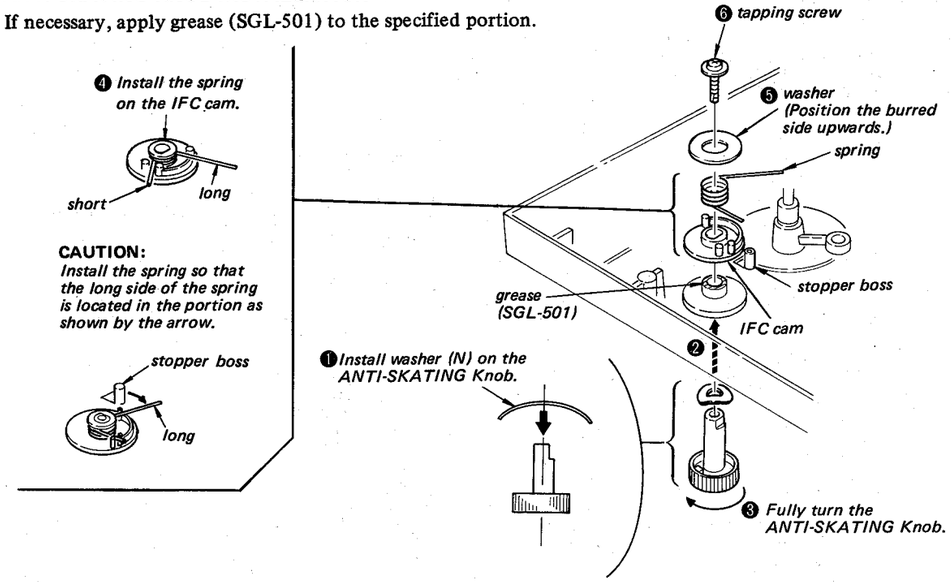




PS-LX22/B/C/(A)/B(A)

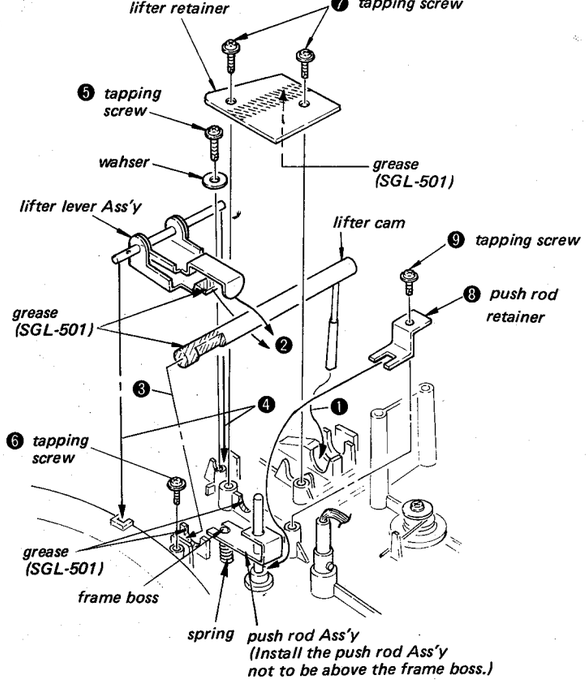
ANTI-SKATING KNOB INSTALLATION

If necessary, apply grease (SGL-501) to the specified portion.


❹ Install the spring on the IFC cam.
short
long
CAUTION:
Install the spring so that the long side of the spring is located in the portion as shown by the arrow.
stopper boss
long
❻ tapping screw
❺ washer (Position the burred side upwards.)
spring
stopper boss
grease (SGL-501)
IFC cam
❷
❶ Install washer (N) on the ANTI-SKATING Knob.
❸ Fully turn the ANTI-SKATING Knob.

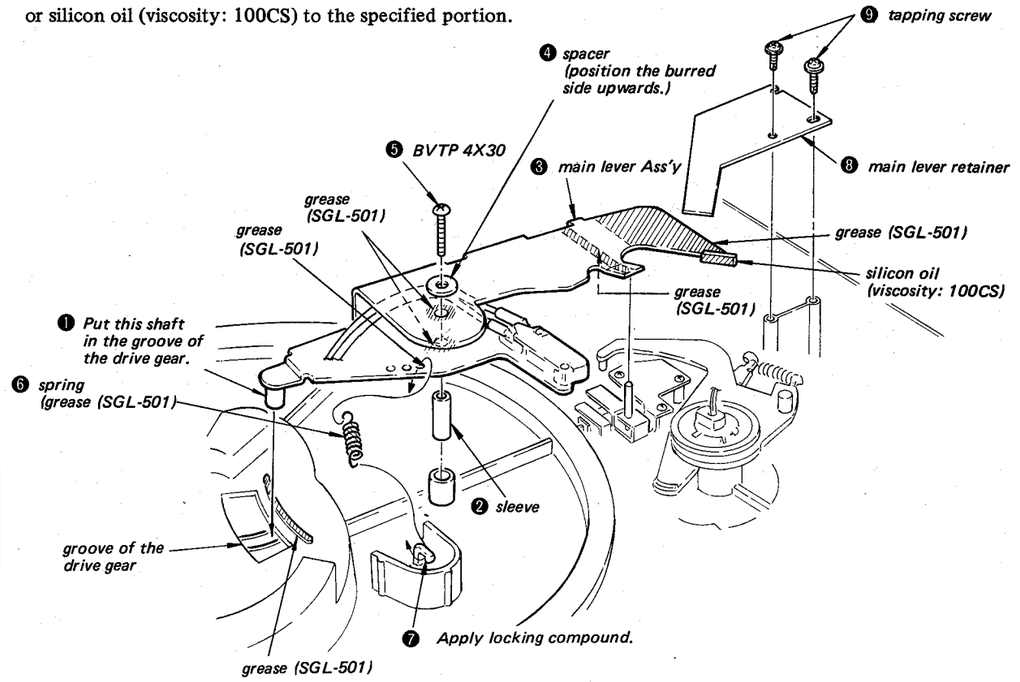
LIFTER LEVER ASS'Y INSTALLATION

If necessary, apply grease (SGL-501) to the specified portion.

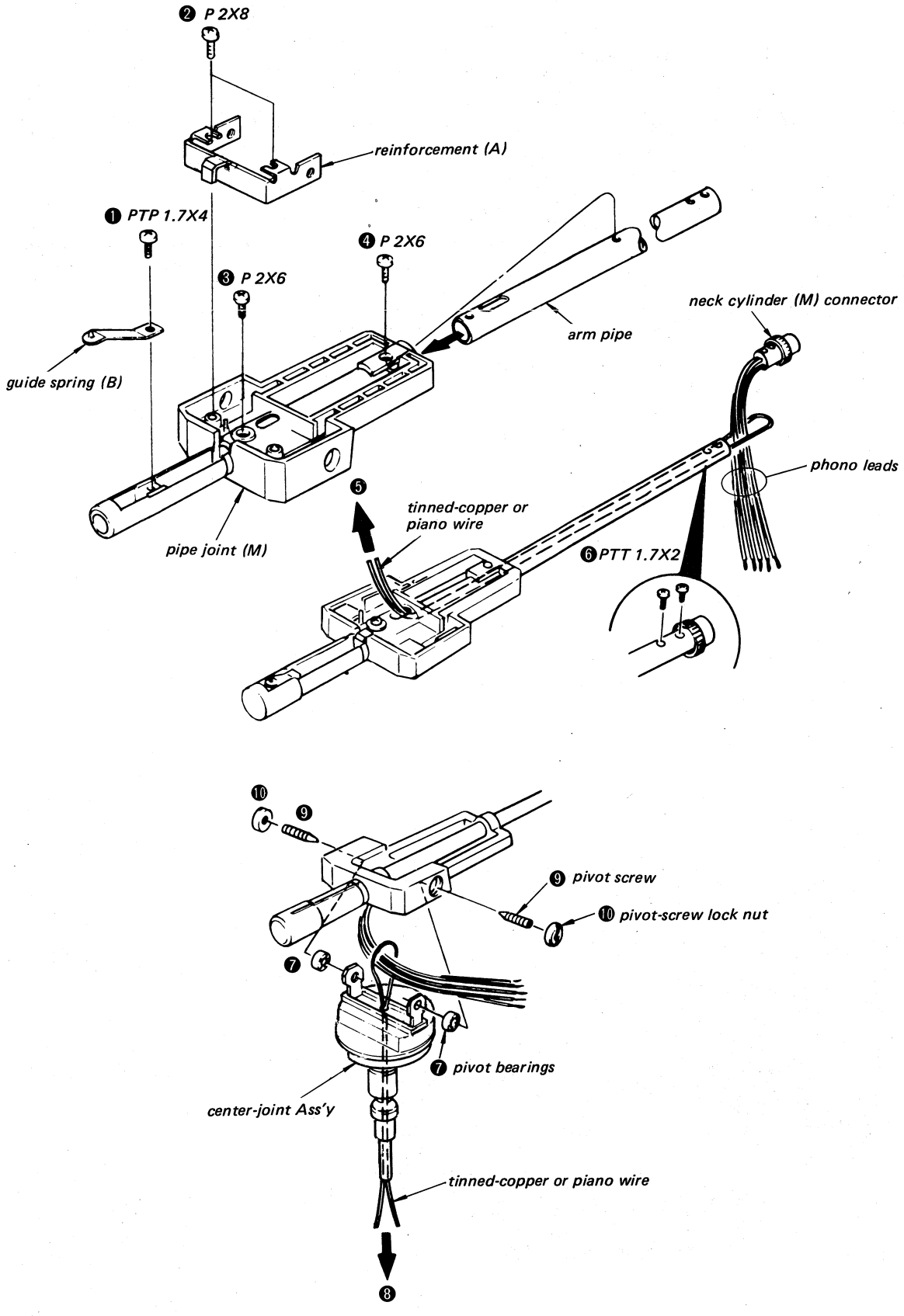


MAIN LEVER INSTALLATION

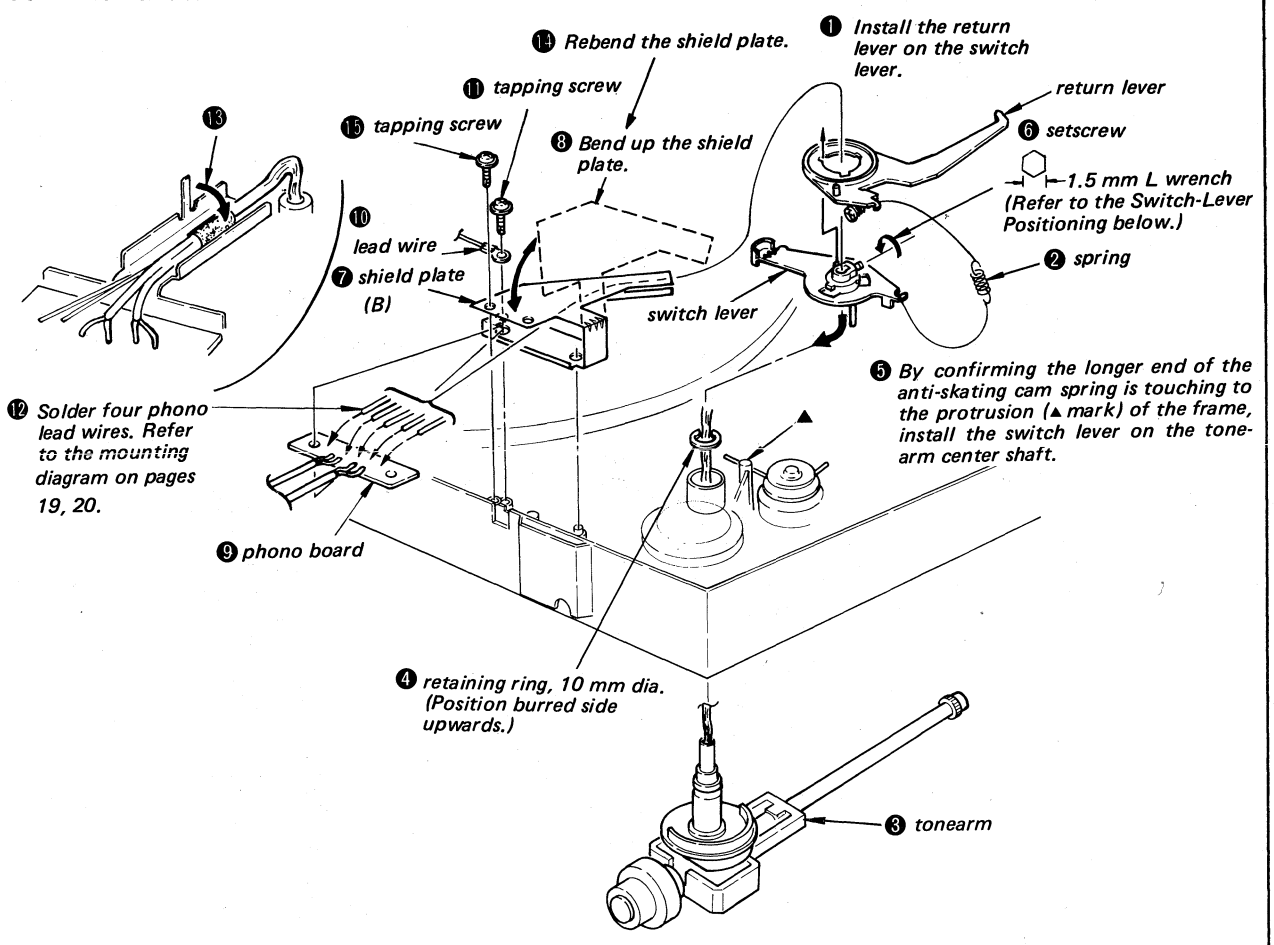
If necessary, apply grease (SGL-501) or silicon oil (viscosity: 100CS) to the specified portion.

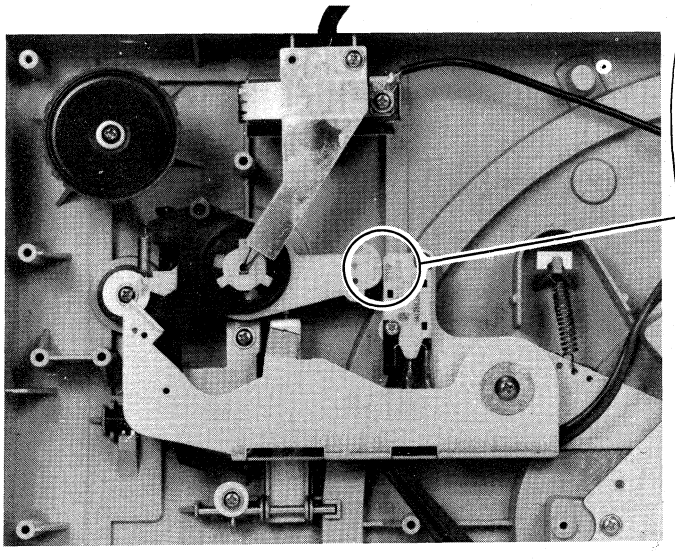


ASSEMBLING THE TONEARM



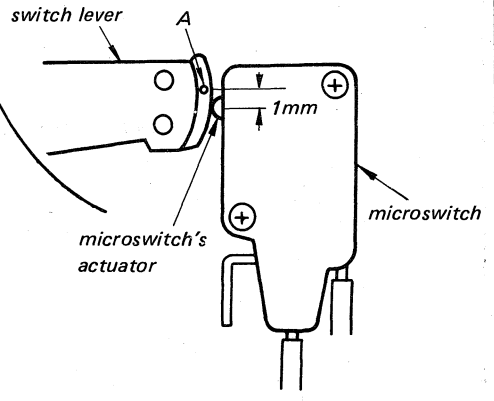
TONEARM INSTALLATION


❶ Install the return lever on the switch lever.
❷ spring
❸ tonearm
❹ retaining ring, 10 mm dia. (Position burred side upwards.)
❺ By confirming the longer end of the anti-skating cam spring is touching to the protrusion (▲ mark) of the frame, install the switch lever on the tone-arm center shaft.
❻ setscrew
1.5 mm L wrench (Refer to the Switch-Lever Positioning below.)
❼ shield plate (B)
❽ Bend up the shield plate.
❾ phono board
❿ lead wire
⓫ tapping screw
⓬ Solder four phono lead wires. Refer to the mounting diagram on pages 19, 20.
⓭
⓮ Rebend the shield plate.
⓯ tapping screw
return lever
switch lever



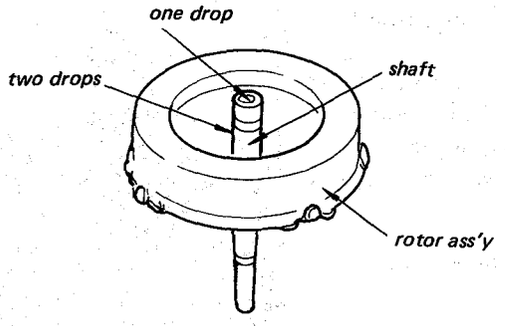
Switch-Lever Positioning:

1. Place the tonearm on the tonearm rest.
2. Position the drive gear to the rest mode.
3. Position the part A of the switch lever 1mm off the microswitch's actuator as shown in the figure and tighten the set screw secuerly.

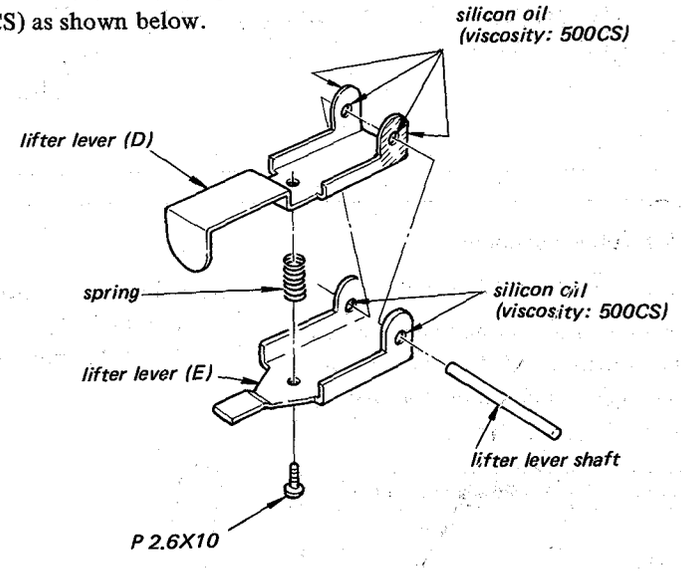


LUBRICATION

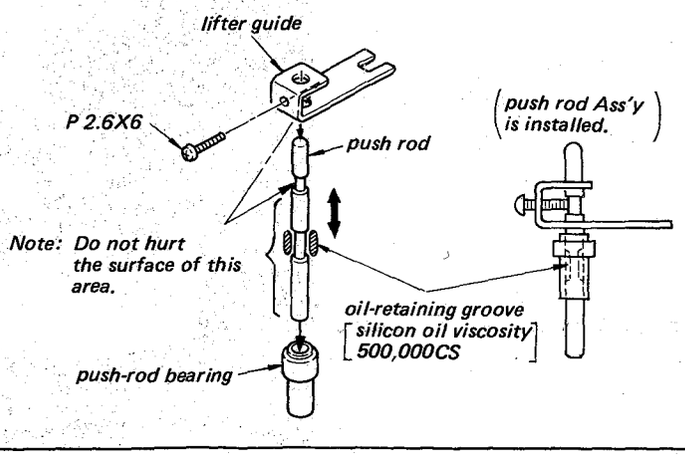
1. When the motor rotor ass'y is replaced, apply Sony oil OL-2KA to the rotor shaft as illustrated below.



2. When replacing the lifter lever (D) or (E), apply silicon oil (viscosity: 500CS) as shown below.



3. Lubrication for push rod
   CAUTION:
   When lubricating, rotate and move the push rod up and down a few times.



SECTION 3
ADJUSTMENTS

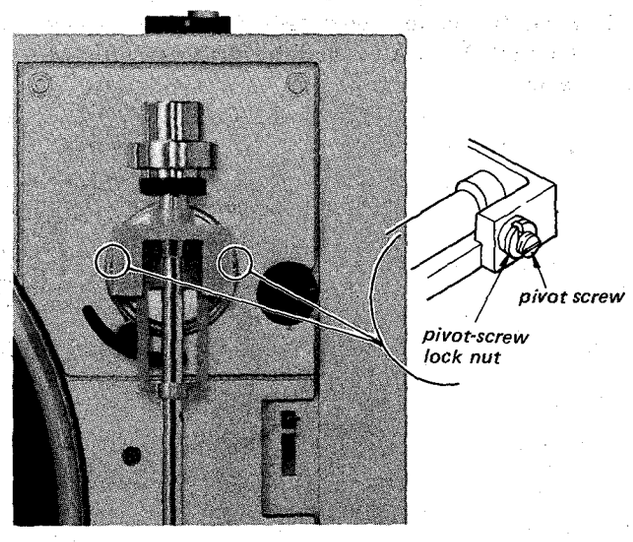
Note: Before performing the adjustments, make a proper stylus-force setting, 1.8g (XL-150).

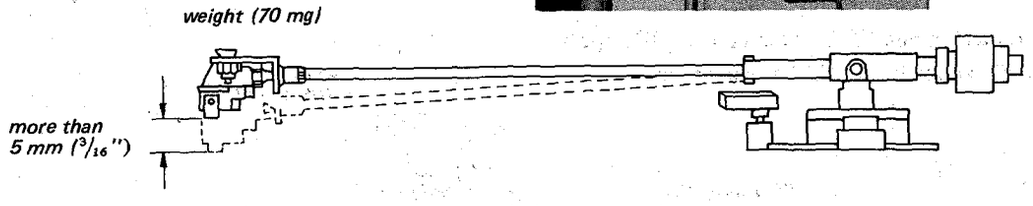
3-1. MECHANICAL ADJUSTMENTS

Longitudinal Sensitivity Adjustment

1. Make the longitudinal balance adjustment of tonearm.
2. Repeating the following procedures, adjust the pivot screws and the lock nuts.
   a. When the 70 mg weight is placed on the top of the shell, the tonearm sinks more than 5 mm ($^3/_{16}$") measured at stylus-tip.
   b. When the weight is removed, the tonearm returns horizontally.

Note: Adjust screws so that they protrude in the same amount.



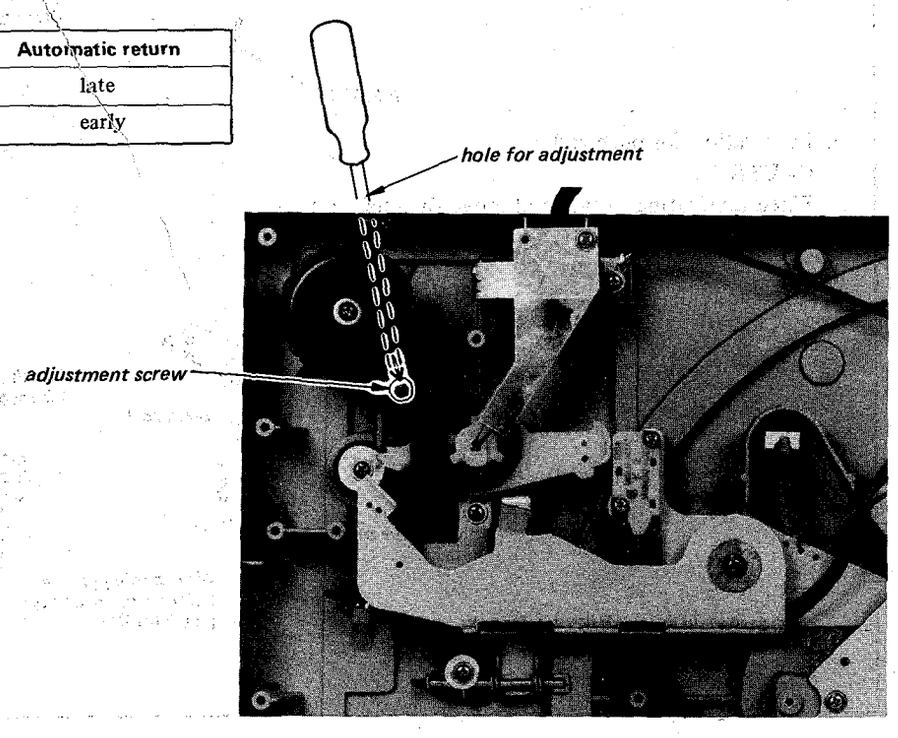


Automatic Return Position Adjustment

1. Reject the tonearm by REJECT button.
2. Bring the tonearm to the automatic-return test groove (inside portion) of the test record (YFSC-16), and adjust the screw for making the tonearm return at count 3 to 12.

Turning direction	Automatic return
clockwise	late
counterclockwise	early

Note: The normal auto-return position is between 59 mm ($2\text{-}^3/_8$") and 64 mm ($2\text{-}^1/_2$") from the center of the center shaft.



Tonearm Height Adjustment

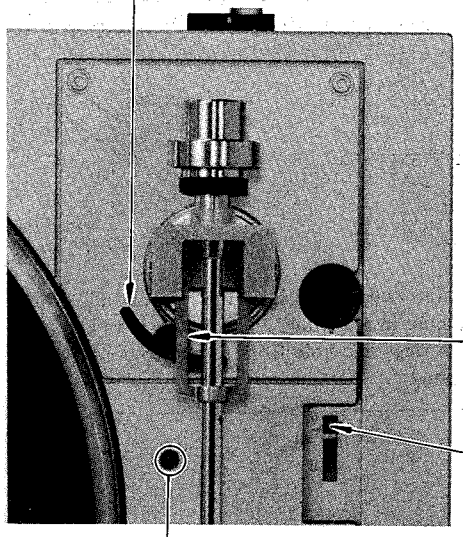
Note: Perform both adjustments A) and B).

A)

1. Bring the tonearm toward the inner of the record and put the stylus in the last groove of the record.
2. Push the REJECT button and slowly turn the turntable by hand to lift the tonearm.
3. Adjust the height of the tonearm lifter by turning the adjustment screw(A) so that the clearance between the stylus tip and the record is approx. 6 mm ($^1/_4$") to 12 mm ($^{15}/_{32}$").
4. After the adjustment, make sure by turning the turntable by hand that the tonearm smoothly returns to the tonearm rest.

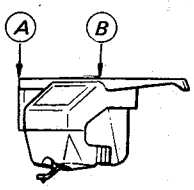
B)

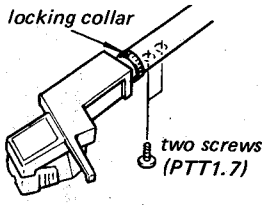
1. Make a lifter up mode by lifting up the cueing lever.
2. Bring the tonearm to the outer-most record groove. With this condition, adjust the adjustment screw (B) so that the clearance between the stylus tip and the record surface becomes in 6 mm ($^3/_{16}$") to 12 mm ($^{15}/_{32}$").
3. Move the tonearm to the inner-most groove. In this condition, the clearance between the stylus tip and the record surface should also be 6 mm ($^1/_4$") to 12 mm ($^{15}/_{32}$").
4. The clearance difference between A) and B)-3 should be less than 4 mm ($^3/_{16}$").
5. After the adjustment, lock the adjustment screw (B) with locking compound.



Cartridge Level Adjustment

Loosen the two screws and adjust the position of the locking collar so that the point Ⓐ and point Ⓑ become horizontal.





Note: Move the tonearm inside to just above the adjustment hole in the frame. The two screws are accessible through the hole from the bottom side using a screwdriver.

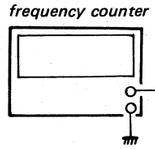
PS-LX22/B/C/(A)/B(A)

3-2. ELECTRICAL ADJUSTMENTS

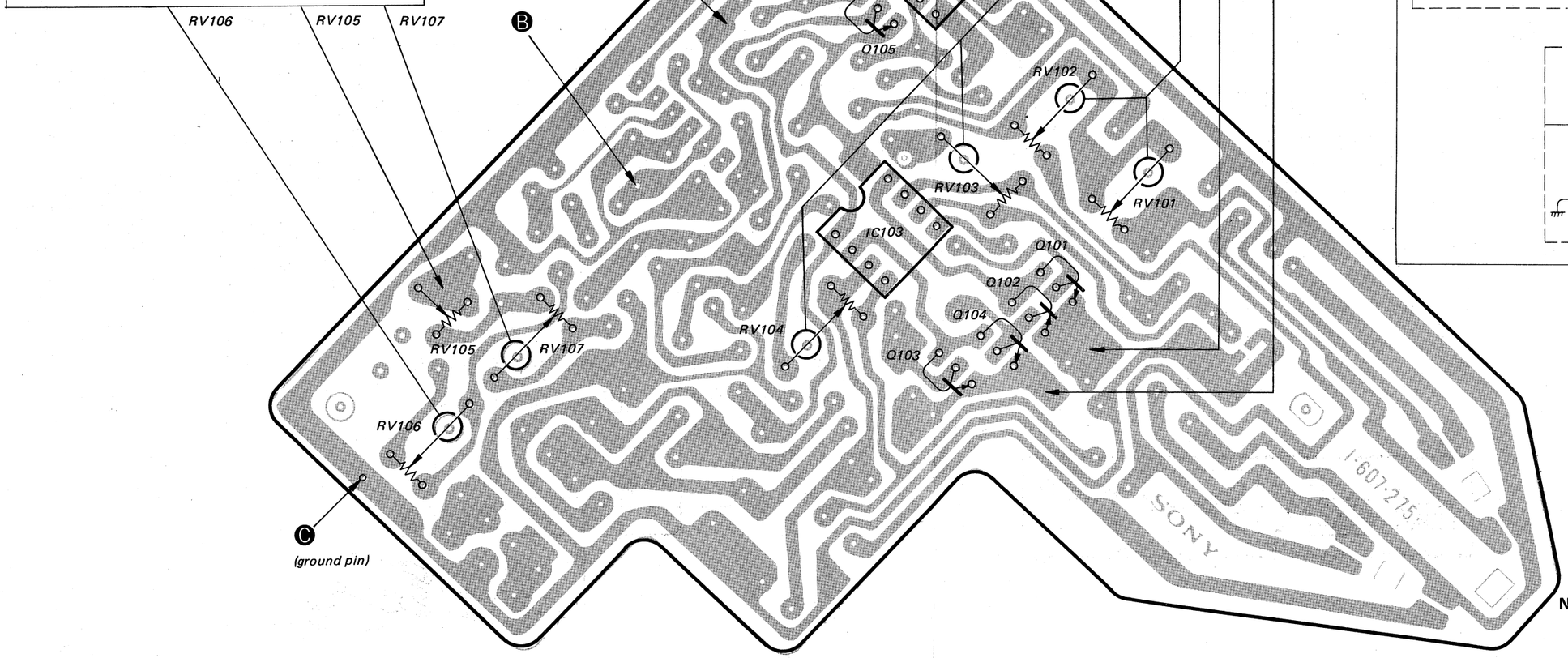
Speed Adjustment

Note: Use a small-blade screwdriver for the adjustments.

1. Connect a frequency counter to pin ① of IC102.
2. Turn the power switch on.

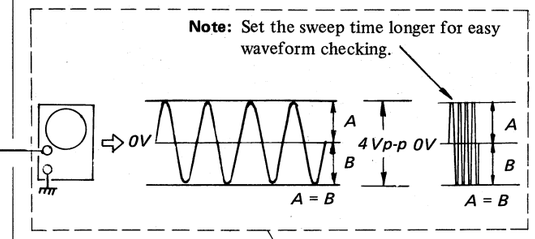


3. Turn the SPEED switch to 45.
4. Adjust the coarse adjustment RV105 for a 96Hz reading on the frequency counter.
   If it is not obtained 96Hz, adjust the fine adjustment RV107 for 95.72 – 96.26 Hz reading.
5. Turn the SPEED switch to 33.
6. Adjust the fine adjustment RV106 for 70.90 – 71.32Hz reading.



Gain/Offset Adjustments

1. Connect the pattern Ⓑ to the ground pin Ⓒ, and apply a 1V dc to the pattern Ⓐ.
2. Turn the power switch on.
3. Adjust the gain adjustment RV101 at the switch position H1 for a 4 Vp-p reading on the oscilloscope.
4. Adjust the gain adjustment RV102 at H2 for a 4 Vp-p reading.
5. Adjust the offset adjustment RV103 at H1 for a 0V dc centering on the waveform.
6. Adjust the offset adjustment RV104 at H2 for a 0V dc centering.
7. After the adjustments, disconnect the pattern Ⓑ from the ground pin Ⓒ and remove the dc-voltage connection from the pattern Ⓐ.



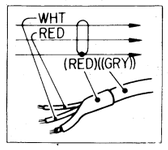
Note: This pattern is former type.

SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM

PS-LX22 Former Type

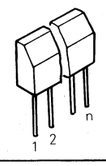
- Color code of sleeving over the end of the jacket.



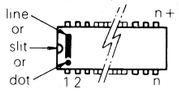
- ▒▒ : B+ pattern
- ▒▒ : B- pattern

Semiconductor Lead Layouts

CX-065B

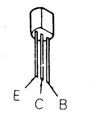


μPC4558C



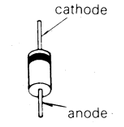
(Top view)

2SC945
2SC1364

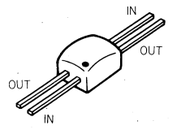


2SB734
2SD774

10E-2
HZ6A2L

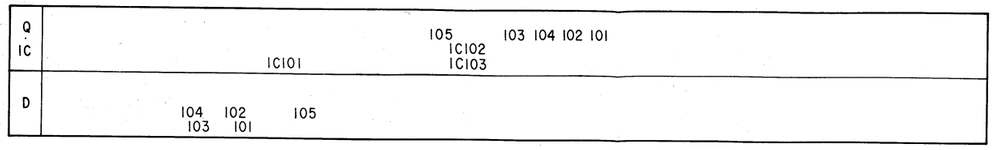


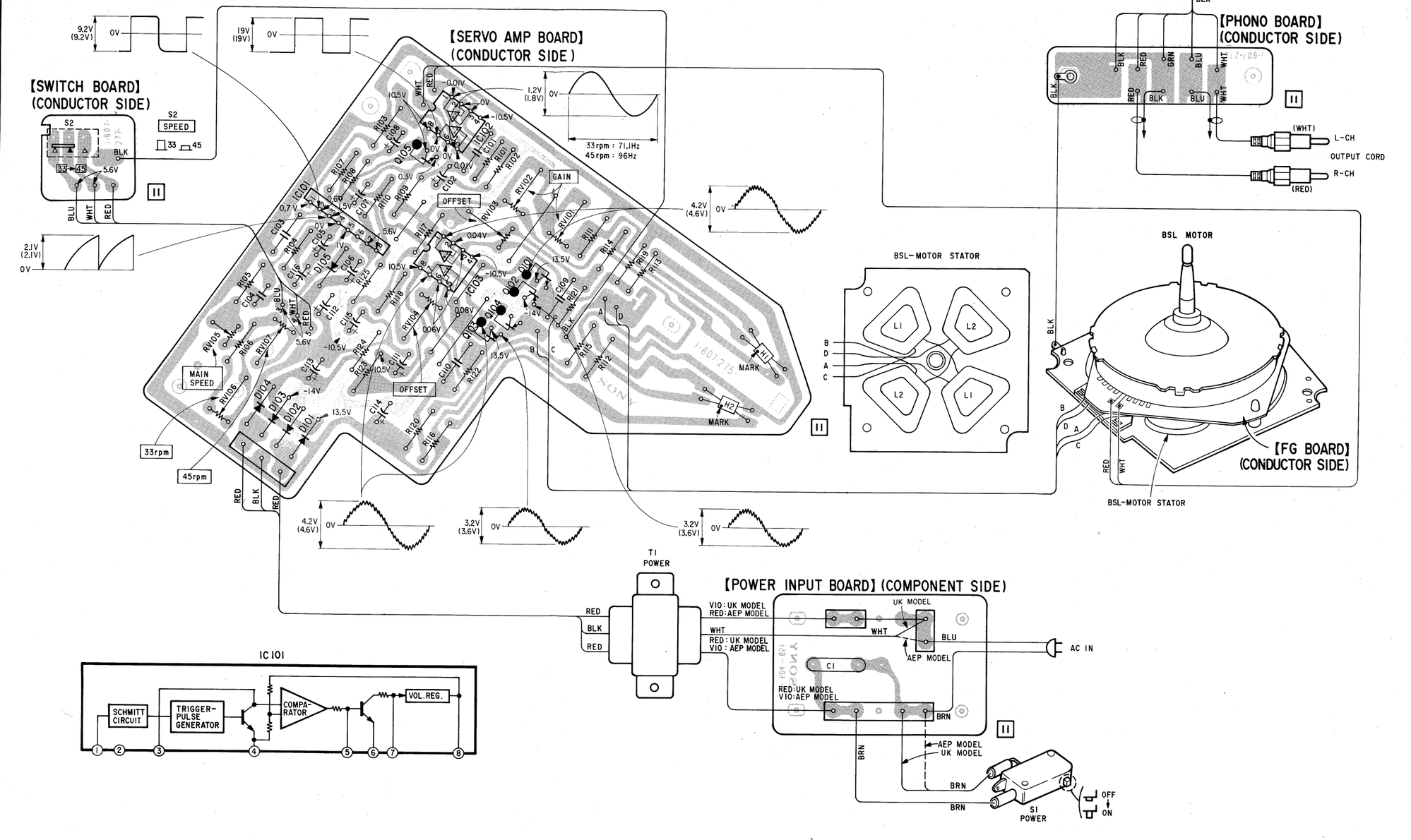
HL300C



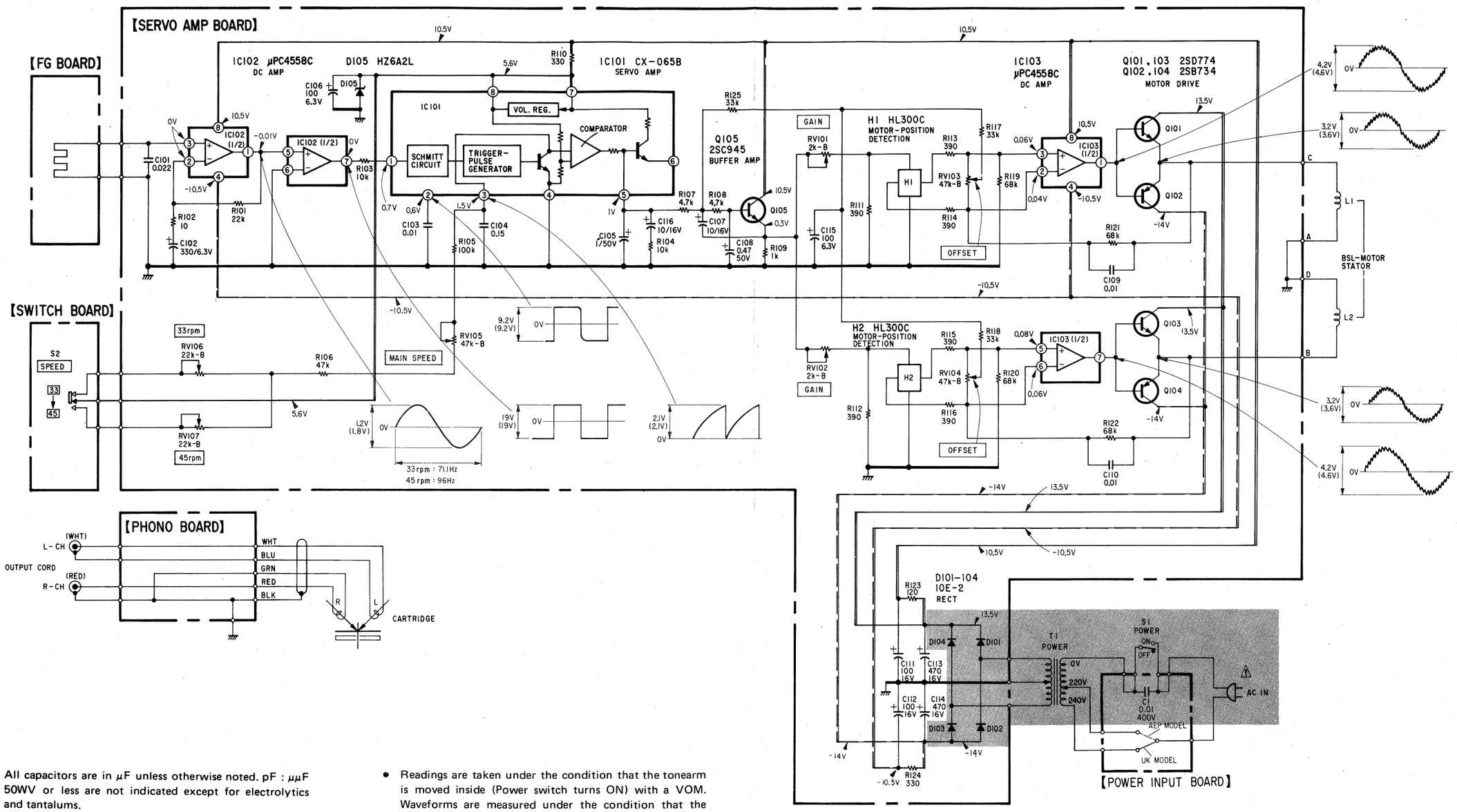
A B C D E F G H I J K L M

1 2 3 4 5 6 7 8 9 10





4-2. SCHEMATIC DIAGRAM PS-LX22 Former Type



- All capacitors are in µF unless otherwise noted. pF : µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ▭ : adjustment for repair.
- ——: B+ bus.
- – – –: B- bus.
- Voltages and waveforms are dc with respect to ground unless otherwise noted.

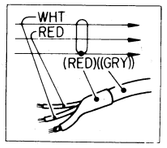
- Readings are taken under the condition that the tonearm is moved inside (Power switch turns ON) with a VOM. Waveforms are measured under the condition that the tonearm is moved inside (Power switch turns ON) with an oscilloscope.
  no mark : 33 rpm
  ( ) : 45 rpm
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S1	POWER	OFF
S2	SPEED	33

4-3. MOUNTING DIAGRAM

PS-LX22 New Type / PS-LX22B/C/(A)/B(A)

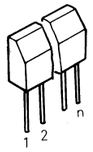
- Color code of sleeving over the end of the jacket.



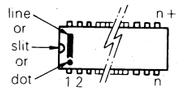
- ▒▒ : B+ pattern

Semiconductor Lead Layouts

CX-065B



μPC4558C

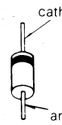


(Top view)

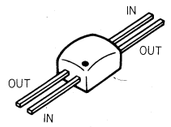
2SC945
2SC1364

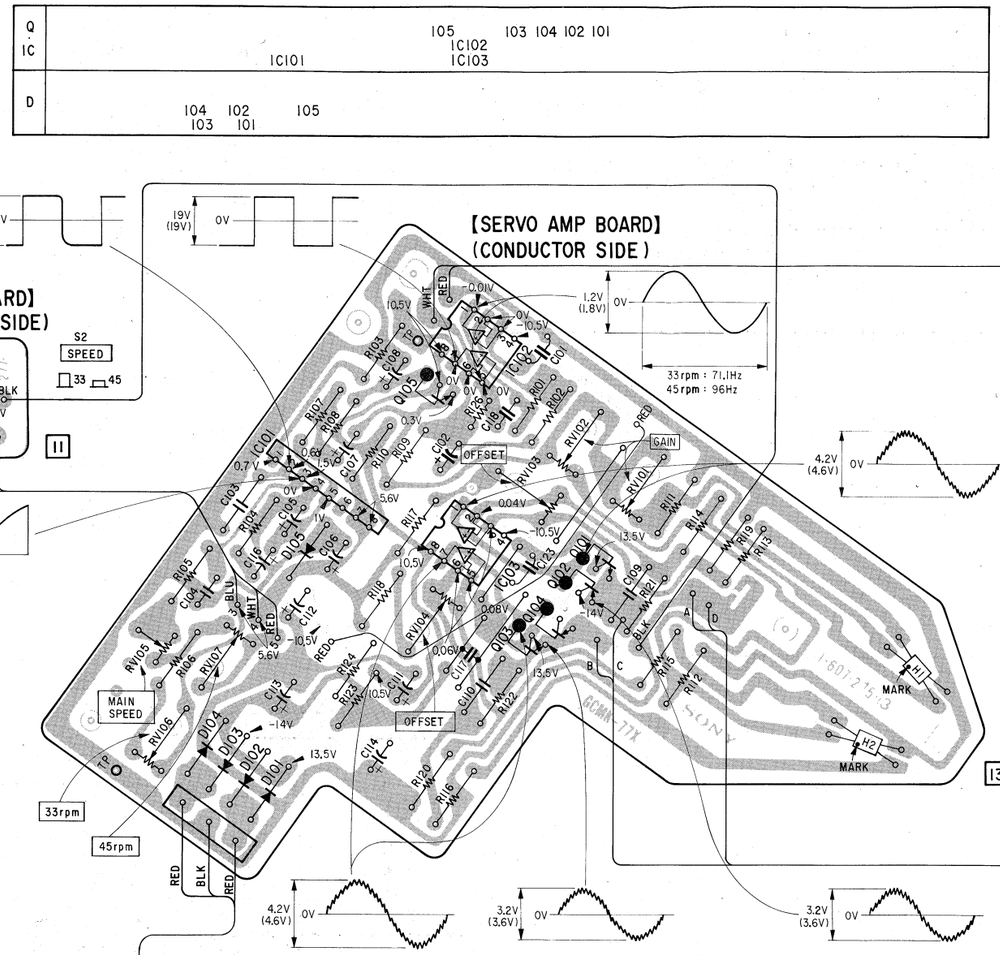
2SB734
2SD774

10E-2
HZ6A2L



HL300C



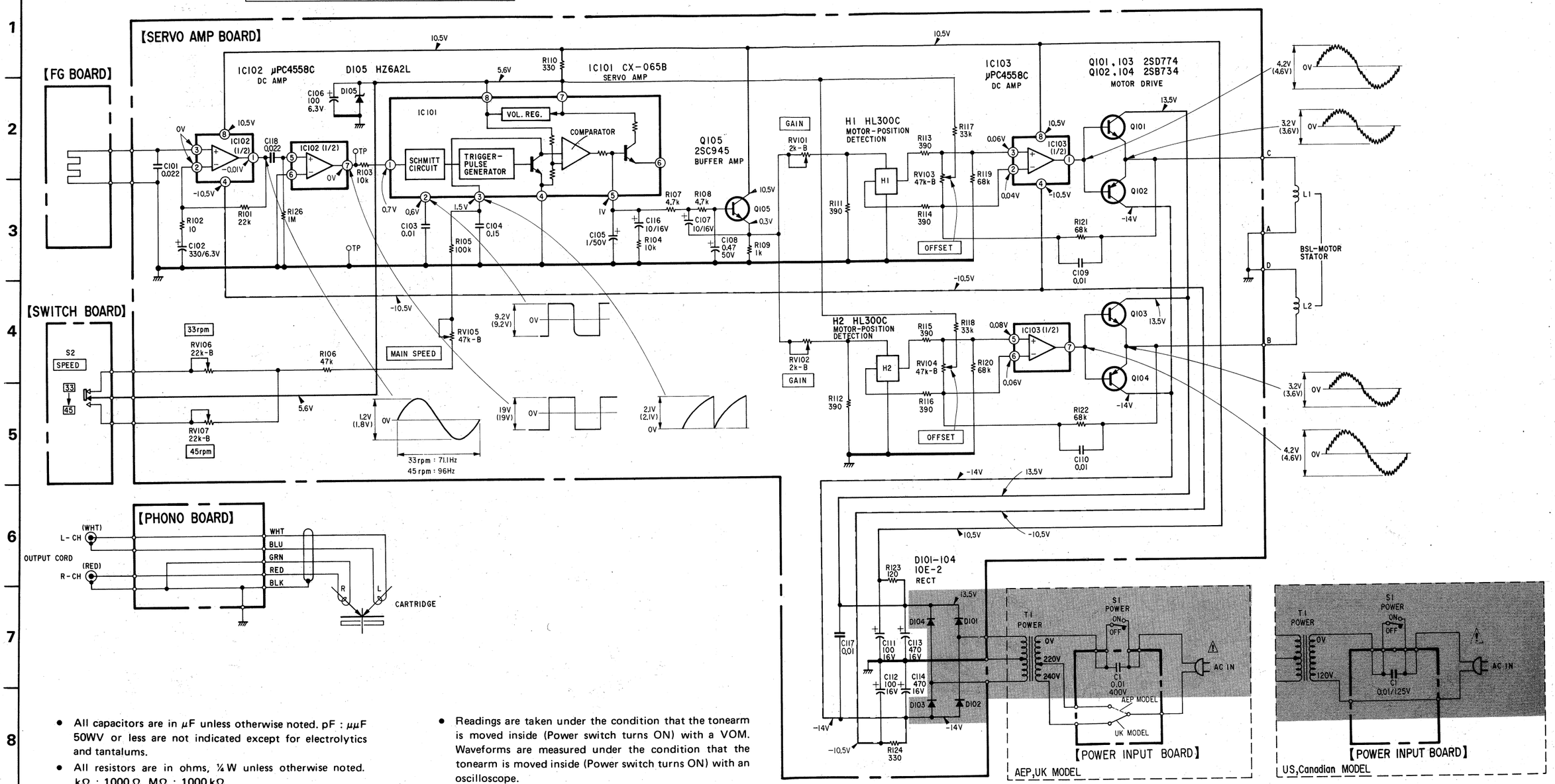


PS-LX22/B/C/(A)/B(A) PS-LX22/B/C/(A)/B(A)

PS-LX22 New Type / PS-LX22B/C/(A)/B(A)

4-4. SCHEMATIC DIAGRAM

PS-LX22 New Type / PS-LX22B/C/(A)/B(A)



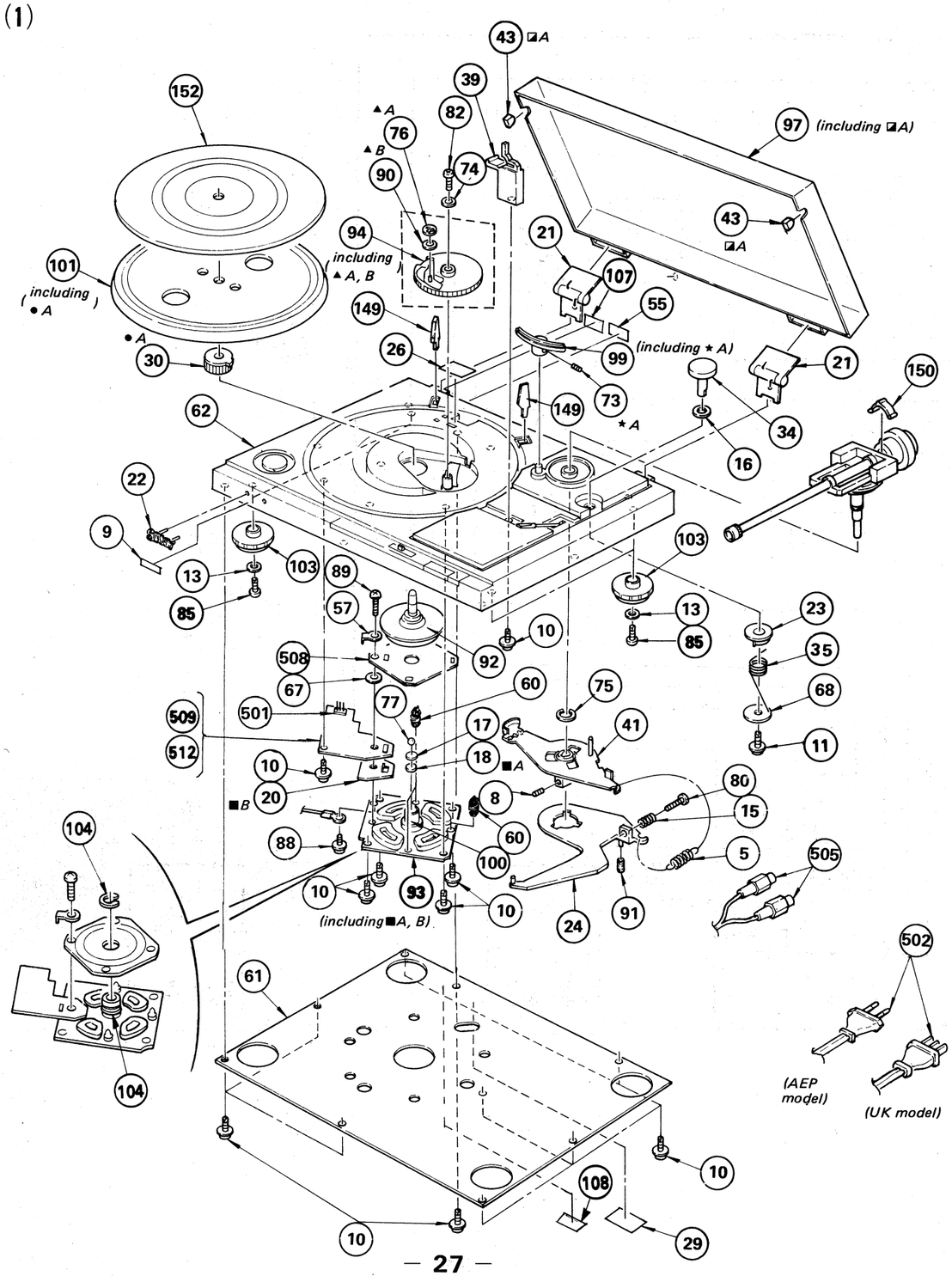
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ▭ : adjustment for repair.
- ——: B+ bus.
- – – –: B- bus.
- Voltages and waveforms are dc with respect to ground unless otherwise noted.
- Readings are taken under the condition that the tonearm is moved inside (Power switch turns ON) with a VOM. Waveforms are measured under the condition that the tonearm is moved inside (Power switch turns ON) with an oscilloscope.
  no mark : 33 rpm
  ( ) : 45 rpm
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S1	POWER	OFF
S2	SPEED	33

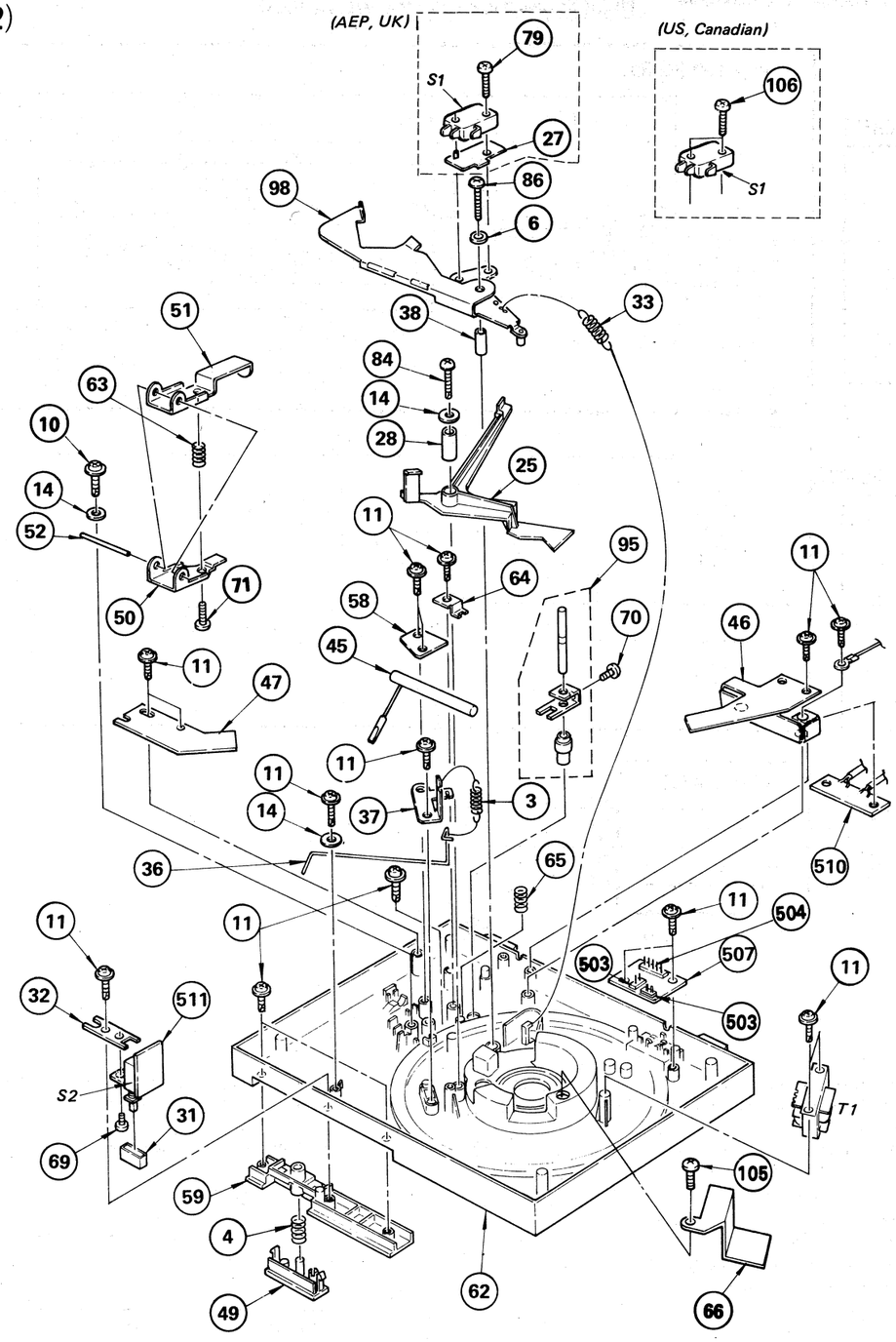
SECTION 5

EXPLODED VIEWS AND PARTS LIST

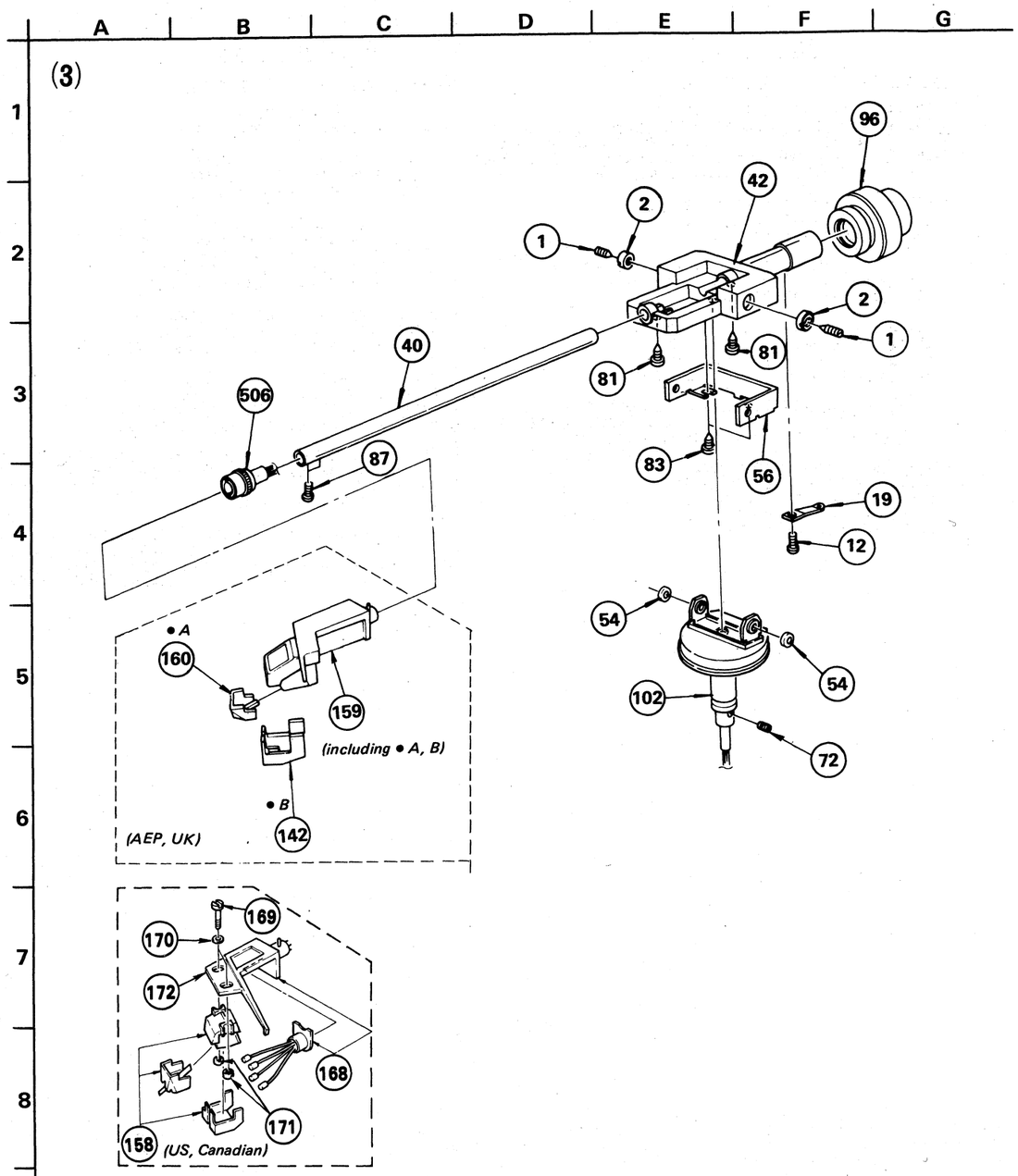
(1)



(2)



PS-LX22/B/C/(A)/B(A)



GENERAL SECTION

No.	Part No.	Description
1	2-203-518-61	SCREW, PIVOT
2	2-203-519-00	LOCK NUT, PIVOT SCREW
3	3-491-240-00	SPRING, TENSION
4	3-533-014-00	SPRING, COMPRESSION
5	3-536-780-00	SPRING, TENSION
6	3-610-931-11	SPACER, SHAFT, DRUM, HEAD
7	.....	
8 ♦	3-701-508-00	SET SCREW, DOUBLE POINT 3X6
9	3-701-690-00	(UK)...LABEL (MADE IN JAPAN)
10	3-703-136-00	SCREW, TAPPING
11	3-703-137-00	SCREW, TAPPING
12	3-703-454-00	SCREW, +PTP 1.7X4
13	4-301-647-00	WASHER, SPECIAL
14	4-812-554-00	WASHER
15	4-836-836-00	SPRING, COMPRESSION
16	4-844-041-00	WASHER, (N)
17	4-852-007-00	RETAINER (A), THRUST
18	4-852-008-00	RETAINER (B), THRUST
19	4-853-043-00	SPRING (B), GUIDE
20	4-857-642-00	HOLDER, PC BOARD
21	4-857-653-00	(LX22/B/C)...HINGE, DUST COVER
22	4-857-661-11	EMBLEM, SONY
23	4-858-229-00	CAM, IFC
24 ♦	4-858-234-00	LEVER, RETURN
25 ♦	4-858-240-00	LEVER (M), CLUTCH
26	4-858-264-21	LABEL, CAUTION
27 ♦	4-858-268-00	(LX22;AEP,UK,LX22B/(A)/B(A)) ...SHEET, INSULATING
28	4-861-933-00	SLEEVE (D)
29	4-866-073-00	(AEP)...LABEL, CAUTION, AC CORD
30	4-868-052-00	GEAR, CENTER
31	4-870-730-11	KNOB, SPEED
32 ♦	4-870-746-00	BRACKET, SWITCH
33	4-870-785-00	SPRING, TENSION (MAIN LEVER)
34	4-874-247-00	KNOB, IFC
35	4-874-250-00	SPRING
36	4-875-204-00	SPRING
37 ♦	4-875-205-00	PLATE, FIXED
38	4-875-207-00	SLEEVE
39	4-875-208-00	(LX22/C/(A))...REST, ARM
39	4-875-208-31	(LX22B/B(A))...REST, ARM
40	4-875-210-00	PIPE, ARM
41	4-875-214-00	LEVER, SWITCH
42	4-875-218-00	JOINT (M), PIPE

GENERAL SECTION

No.	Part No.	Description
43	4-876-304-00	(LX22/B/C)...CUSHION, DUST COVER
44	.....	
45	4-877-824-00	CAM, LIFTER
46 ♦	4-877-839-00	PLATE (B), SHIELD
47 ♦	4-877-854-00	RETAINER, MAIN LEVER
48	.....	
49	4-881-608-00	KNOB, REJECT
50 ♦	4-881-609-00	LEVER (E), LIFTER
51 ♦	4-881-610-00	LEVER (D), LIFTER
52 ♦	4-881-611-00	SHAFT, LEVER, LIFTER
53	.....	
54	4-881-618-00	BEARING, PIVOT
55	4-881-624-04	(LX22;AEP,LX22(A))..LABEL, MODEL NUMBER(AEP)
55	4-881-625-00	(LX22;UK).....LABEL, MODEL NUMBER(UK)
55	4-881-674-00	(LX22;US,Canadian,LX22C) ....LABEL, MODEL NUMBER (US,CND)
55	4-881-695-02	(LX22B/B(A))........LABEL, MODEL NUMBER(AEP)
56 ♦	4-881-628-00	REINFORCEMENT (A)
57 ♦	4-881-629-00	PLATE (A), GROUND
58 ♦	4-881-631-00	RETAINER, LIFTER
59	4-881-632-02	(LX22/C/(A))...PANEL, FRONT
59	4-881-632-11	(LX22B/B(A))...PANEL, FRONT
60 ♦	4-881-636-11	SUPPORT (TMD), PC
61 ♦	4-881-637-00	BOARD, BOTTOM
62	4-881-638-00	(LX22/C/(A))...FRAME
62	4-881-638-11	(LX22B/B(A))...FRAME
63	4-881-642-00	SPRING, COMPRESSION
64 ♦	4-881-650-00	RETAINER, PUSH ROD
65	4-881-651-00	SPRING, COMPRESSION
66	4-881-691-00	PLATE, SHIELD (B)
67	4-885-727-00	SPACER
68	4-890-173-00	WASHER
69	7-621-770-87	SCREW +P 2.6X5
70	7-621-259-45	SCREW +P 2.6X6
71	7-621-284-40	SCREW +P 2.6X10
72	7-621-712-28	SET-SCREW, SLOT 2.6X3 CUP POINT
73	7-621-738-08	SET-SCT, HEX. 2.6X4, FLAT POINT
74	7-623-105-16	W 2, MIDDLE
75	7-624-133-54	STOP RING 10, TYPE-CE
76	7-624-190-81	STOP RING 2, TYPE-CS
77	7-671-114-01	BALL 4, STEEL
78	7-671-151-01	STAINLESS, BALL 1/16INCH
79	7-682-122-27	(LX22;AEP,UK,LX22(A)/B(A))...SCREW +P 3X15
80	7-682-553-09	SCREW +B 3X20

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS

- MMH : mH, UH : μH

GENERAL SECTION

No.	Part No.	Description
81	7-685-104-64	SCREW +P 2X6 TYPE4
82	7-685-105-21	SCREW +P 2X8 TYPE2 SLIT
83	7-685-105-24	SCREW +P 2X8 TYPE2 SLIT
84	7-685-152-21	SCREW +P 3X25 TYPE2 SLIT
85	7-685-651-11	SCREW +BVTP 3X20 TYPE1
86	7-685-666-21	SCREW +BVTP 4X30 TYPE2 SLIT
87	7-685-772-04	SCREW +PTT 1.7X2, TYPE1
88	7-685-871-09	SCREW +BVTT 3X6 (S)
89	7-682-149-13	SCREW +P 3X10
90	7-688-003-11	W 3, MIDDLE
91	9-911-815-01	CUSHION
92	A-4608-213-A	ROTOR ASSY
93	A-4608-214-A	STATOR ASSY
94	A-4609-010-A	GEAR ASSY, DRIVING
95	A-4637-058-A	ROD ASSY, PUSH
96	X-4874-214-0	WEIGHT ASSY, MAIN
97	X-4877-804-0	(LX22/B/C)...COVER ASSY, DUST
98 ♦	X-4877-805-5	(LX22;AEP,UK,LX22B/(A)/B(A)) .....LEVER ASSY, MAIN
98	X-4877-805-6	(LX22;US,Canadian,LX22C)..LEVER ASSY, MAIN
99	X-4880-501-0	PLATE ASSY, UP AND DOWN
100	.....	
101	X-4881-603-0	TURNTABLE ASSY
102	X-4881-604-0	JOINT ASSY, CENTER
103	X-4881-607-2	INSULATOR ASSY
104	7-624-133-94	STOP RING 15, TYPE-CE
105	7-685-646-11	SCREW +BVTT 3X8 TYPE2 N-S
106	7-682-150-01	(LX22;US,Canadian,LX22C)...SCREW +P 3X12
107	3-703-678-00	(LX22;US,LX22C)····LABEL, CAUTION, MAIN, NEW UL
108	3-703-680-00	(LX22;US,LX22C)····LABEL, CAUTION, SUB, NEW UL

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
141 ⚠	1-551-967-00	(UK)...CORD, POWER
142	2-231-306-00	COVER, STYLUS
143	3-701-634-00	BAG, POLYETHYLENE
144	3-701-806-00	ADAPTOR, 45, (E)
145	3-783-947-11	(LX22;AEP,UK,LX22C)...MANUAL, INSTRUCTION
146	3-783-947-21	(LX22;US,Canadian,LX22C) ....MANUAL, INSTRUCTION
147	3-783-947-41	(LX22;AEP,LX22C/(A)/B(A)) ....MANUAL, INSTRUCTION
148	3-794-123-01	LABEL, CAUTION
149	4-874-262-00	GUIDE, RECORD
150	4-876-348-00	(LX22;AEP,UK,LX22B/(A)/B(A)) ....GUIDE, STYLUS PRESSURE SETTING
151	4-876-352-00	(LX22/B/C).....SHEET, PROTECTION
151	4-879-798-00	(LX22(A)/B(A))...SHEET, PROTECTION
152	4-877-807-11	SHEET, TURNTABLE
153	4-881-667-00	(LX22;AEP,UK,US,Canadian) ...INDIVIDUAL CARTON
153	4-881-696-00	(LX22B).....INDIVIDUAL CARTON
153	4-889-501-00	(LX22B(A)).....INDIVIDUAL CARTON
153	4-889-502-00	(LX22(A)).....INDIVIDUAL CARTON
154	4-881-668-00	HOLDER, TURNTABLE
155	4-881-669-00	(LX22/B/C)...CUSHION (LEFT)
156	4-881-670-00	(LX22/B/C)...CUSHION (RIGHT)
157	4-881-671-00	CUSHION, TURNTABLE
158	1-549-105-00	(LX22C)...CARTRIDGE COMPLETE ASSY
159	A-4505-069-A	(LX22;AEP,UK,LX22B/(A)/B(A)) .....CARTRIDGE COMPLETE ASSY (XL-150)
160	A-4587-062-A	STYLUS ASSY
161	3-701-613-00	(LX22B/C)...BAG, POLYETHYLENE
162	3-701-630-00	(LX22;US,LX22B/C)...BAG, POLYETHYLENE
163	3-773-261-11	(LX22B)...MANUAL, INSTRUCTION
164	3-773-261-41	(LX22B)...MANUAL, INSTRUCTION
165	4-862-680-00	(LX22)....PROTECTOR
166	4-862-043-00	(LX22B)...CUSHION, ARM
167	4-881-698-00	(LX22B)...PROTECTOR
168	1-555-463-00	(LX22;US,Canadian,LX22C) ....CONNECTOR, WITH LEAD
169	2-056-532-00	(LX22C)...SCREW
170	2-229-507-00	(LX22C)...WASHER
171	4-815-655-01	(LX22C)...NUT
172	X-4869-912-0	(LX22;US,Canadian,LX22C)...SHELL ASSY, HEAD
173	X-4869-915-0	(LX22;US,Canadian)...SCREW ASSY, FITTING
174	3-783-947-31	(LX22;US,Canadian,LX22C) ....MANUAL, INSTRUCTION
175	4-881-686-00	(LX22(A)/B(A))....CUSHION
176	4-881-699-00	(LX22C)····INDIVIDUAL CARTON

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501 ♦	1-508-800-13	U TYPE BASE POST 3P
502 ⚠	1-534-817-XX	(LX22;AEP,LX22B/(A)/B(A)) ...CORD, POWER, EULO PLUG
502 ⚠	1-551-628-00	(LX22;US,Canadian,LX22C)...CORD, POWER
502 ⚠	1-551-963-00	(UK).....CORD, POWER
503 ♦	1-535-115-00	TERMINAL, 2P
504 ♦	1-535-118-00	TERMINAL, 5P
505	1-551-294-00	CORD
506	1-561-551-61	CONNECTOR, NECK CYLINDER (M)
507 ♦	1-604-651-00	PC BOARD, POWER INPUT
508	1-608-883-00	PC BOARD, FG
509 ♦	1-607-275-00	PC BOARD, SERVO
510 ♦	1-607-276-00	PC BOARD, PHONO
511 ♦	1-607-277-00	PC BOARD, SWITCH
512 ♦	A-4619-179-A	MOUNTED PCB, SERVO AMP
C1	1-161-744-00	(LX22;AEP,UK,B/(A)/B(A)) ....CERAMIC 0.01MF 400V
C1 ⚠	1-161-749-00	(LX22;US,Canadian,LX22C) ....CERAMIC 0.01MF 125V
D101 ⚠	8-719-200-02	DIODE 10E-2
D102 ⚠	8-719-200-02	DIODE 10E-2
D103 ⚠	8-719-200-02	DIODE 10E-2
D104 ⚠	8-719-200-02	DIODE 10E-2
D105	8-719-910-62	DIODE HZ6A2L

ELECTRICAL PARTS

Ref.No.	Part No.	Description
H1	8-719-903-00	DIODE HL-300C
H2	8-719-903-00	DIODE HL-300C
IC101	8-759-602-65	IC CX-065B
IC102	8-759-145-58	IC UPC4558C
IC103	8-759-145-58	IC UPC4558C
Q101	8-729-177-43	TRANSISTOR 2SD774
Q102	8-729-103-43	TRANSISTOR 2SB734
Q103	8-729-177-43	TRANSISTOR 2SD774
Q104	8-729-103-43	TRANSISTOR 2SB734
Q105	8-729-663-47	TRANSISTOR 2SC1364
RV101	1-226-234-00	RES, ADJ, CARBON 2K
RV102	1-226-234-00	RES, ADJ, CARBON 2K
RV103	1-226-238-00	RES, ADJ, CARBON 47K
RV104	1-226-238-00	RES, ADJ, CARBON 47K
RV105	1-224-661-00	RES, ADJ, METAL GLAZE 47K
RV106	1-226-237-00	RES, ADJ, CARBON 22K
RV107	1-226-237-00	RES, ADJ, CARBON 22K
S1 ⚠	1-516-657-00	(LX22;US,Canadian,LX22C)..SWITCH, MICRO
S1 ⚠	1-516-889-00	(LX22;AEP,UK,LX22B/(A)/B(A)) ....SWITCH, MICRO
S2	1-552-928-00	SWITCH
T1 ⚠	1-447-256-00	(LX22;US,Canadian,LX22C) ...TRANSFORMER, POWER
T1 ⚠	1-447-257-00	(LX22;AEP,UK,LX22B/(A)/B(A)) ...TRANSFORMER, POWER

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COILS
- MMH : mH, UH : μH

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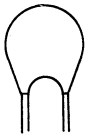
MYLAR CAPACITORS

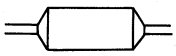
CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				



TANTALUM CAPACITORS

→: Use the high voltage rated one.

CAP. (μF)	RATING 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			



TANTALUM CAPACITORS

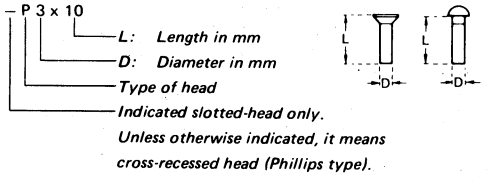
CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/4 WATT CARBON RESISTORS

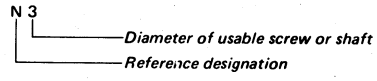
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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